Timing of the termination of obstructive jaundice after antegrade and retrograde decompressive surgeries in obstructive jaundice of various genesis

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Key words: mechanical jaundice, microcholecystostoma, percutaneous cholangiostoma, endoscopic papillosphincterotomy, transpapillary drainage

Introduction

Obstructive jaundice (OJ) is a common surgical pathology [13]. The main reason for its development is gallstone disease (GSD), and malignant tumors of the hepatopancreatoduodenal zone, which occur with a frequency of 9-10 per 100,000 population and account for about 15% of all tumors of the gastrointestinal tract [4, 5, 9, 21, 24]. There is an increase in the number of patients with pancreatic cancer [20, 22], while in 60–80% the tumor is localized in the head [10].

With obstructive jaundice, most authors prefer two-stage treatment [7, 10, 17, 18, 23]. At the first stage, minimally invasive decompression surgery (percutaneous or retrograde) is appropriate and at the second, radical intervention [1, 2, 11, 14]. Among minimally invasive operations, both retrograde and antegrade (cholangio- or cholecystostomies) interventions, including stenting, are widely used [24]. In recent years, there have been many reports of the application of percutaneous transhepatic cholangiostomas (PTC) [3, 6, 11, 12, 25], and cholangiostomas are supplemented with stenting of the common bile duct [1]. Recommended early percutaneous stenting of hepatic choledochus after application of PTC [8]. If it is impossible to perform an effective retrograde intervention to divert bile into the duodenum, less traumatic antegrade methods of external removal of bile are used. Moreover, a number of authors do not see the difference, while others note its existence in terms of resolving liver failure with different decompressions [6, 8, 15, 16]. It is necessary with retrograde and percutaneous endobiliary intervention to determine the most optimal way to resolve obstructive jaundice and liver failure.

Aim of study — to determine in a comparative aspect the effectiveness of various minimally invasive decompression operations for obstructive jaundice of different genesis.

Materials and methods

In 135 patients with obstructive jaundice, on the basis of a pancreatic head tumor, ultrasound transdermal, transhepatic cholangiostomy (PTC, 65 people) and microcholecystostomy (MCS, 70 people) were performed under ultrasound control.

In 643 patients with obstructive jaundice in the presence of cholelithiasis, endoscopic retrograde decompression (493 patients) and percutaneous drainage of the biliary tract under ultrasound control (150 patients) were performed. During percutaneous interventions, a microcholecystostomy (MCS) was formed in 97 patients and a cholangiostoma in 53. With retrograde intervention on the background of cholelithiasis, endoscopic papillosphincterotomy (EPST) (246 people) and EPST with transpapillary drainage (247 people) were performed. In gallstone disease, the resolution of jaundice and the rate of average daily normalization of serum bilirubin in patients with a pancreatic head tumor were evaluated. The study used methods of descriptive statistics: sample size (n),

average (M), average error (m). To test hypotheses about the statistical significance of differences in mean values in independent samples, the non-parametric Mann-Whitney test was used. The critical significance level was taken equal to 0.05. Statistical processing was carried out using application packages SPSS STATISTICA.V.24.

Results and discussion

When using retrograde decompressions against the background of cholelithiasis, normalization of blood serum bilirubin in patients with moderate obstructive jaundice was detected after 10–16 days, and in severe bile duct disease, it started by 25–32 days. The combination of EPST with transpapillary drainage resolved jaundice 6–7 days earlier compared with isolated EPST. With mild cholestasis, such differences were not detected; after retrograde interventions, jaundice in this group of patients was resolved for 3-4 days, both without drainage and with transpapillary drainage

Percutaneous decompression interventions showed that with moderate and severe cholestasis against the background of cholelithiasis, the resolution of jaundice lasted 18–29 days, while it was faster by 7–10 days after application of cholangiostom. Thus, with initial bilirubin 100–200 μmol/L after cholecystostomy, normalization of serum bilirubin occurred at 28.3 ± 1.03 days, and after cholangiostomy at 18.3 ± 1.16 days ($p < 0.05$). In patients with mild jaundice, such differences were not detected, normalization of serum bilirubin in both groups was observed within 8-11 days.

The best decompression effect after EPT with transapillary drainage is apparently associated with the preservation of the peristaltic activity of hepatic choledochus and the suction action of the duodenum 12, therefore, antegrade decompressions are less effective in most of the examined. Cholengiostomas with cholelithiasis approach efficacy to retrograde decompression only with severe obstructive jaundice, which is apparently associated with inflammatory (cholangitis) changes in the walls of the biliary tree and a decrease in peristaltic activity of the bile ducts. Cholecystostomy is the least effective due to cholecystolithiasis and inflammatory changes in the gallbladder wall.

During percutaneous decompression interventions in patients with a pancreatic head tumor and mild cholestasis, there were no differences in the rate of normalization of parameters after MCS and PTC. In patients with moderate to severe jaundice, a higher rate of normalization was observed in the first postoperative week after MCS. During the second week, this advantage was maintained with an initial bilirubin of 101–200 μmol/L (Tables 1, 2).

Table 1

The average rate of decrease in serum bilirubin level for 24 hours in the first week of decompression at different baseline levels of bile duct after the imposition of microcholecystostomy and cholangiostoma

The initial level of bilirubin in blood serum (μmo/l)	Microcholecysto-stomy M±м	Percutaneous transhepatic cholangiostomy M±м	p
Up to 100	4,9±1,8 (n=7)	5,1±1,8 (n=3)	0,660

101–200	18,2±8,7 (n= 29)	6,7±4,6 (n=14)	0,001
201–300	21,8±4,1 (n=25)	8,5±4,7 (n=36)	0,0001
More than 300	49,2±13,1 (n= 9)	21,8±13,2 (n= 12)	0,004

Note: MCS — microcholecystostomy; PTC — percutaneous transhepatic cholangiostomy; p — achieved level of significance.

We also associate a higher rate of decrease in serum bilirubin level after the application of cholecystostomy with the natural peristaltic activity of the bile ducts in the distal direction and the late addition of cholangitis against the background of tumor obstruction.

Table 2

The average rate of decrease in serum bilirubin level per day in the second week of decompression at different initial levels of cholestasis after microcholecystostomy and cholangiostoma

The initial level of bilirubin in blood serum (μmo/l)	Microcholecysto-stomy M±м	Percutaneous transhepatic cholangiostomy M±м	p
Up to 100	3,28±1,20 (n=5)	5,1±2,68 (n=9)	0,203
101–200	13,9±8,6 (n=7)	5,1±2,76 (n=34)	0,017
201–300	10,10±7,90 (n=8)	18,87±7,54 (n=9)	0,100

Note: MCS — microcholecystostomy; PTC — percutaneous transhepatic cholangiostomy; p — achieved level of significance.

Conclusion

Comparison of retrograde and antegrade decompression surgeries shows that for all severity of obstructive jaundice on the background of cholelithiasis, the resolution rate of cholestasis is highest after EPST with transpapillary drainage, with severe cholestasis, percutaneous cholangiostomy approaches these indicators. In patients with jaundice of tumor origin, when comparing cholangio and cholecystostomy, a higher rate of decrease in serum bilirubin is observed after percutaneous interventions with the application of cholecystost.

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Timing of the termination of mechanical jaundice after antegrade and retrograde decompressive surgeries in mechanical jaundice of various genesis

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Key words: mechanical jaundice, microcholecystostoma, percutaneous cholangiostoma, endoscopic papillosphincterotomy, transpapillary drainage

Aim: to determine in a comparative aspect the effectiveness of various minimally invasive decompressive operations in mechanical jaundice of different genesis.

Materials and methods. In 135 patients with mechanical jaundice, the rate of bile duct resolution after cholecystostomy and percutaneous cholangiostomy was studied on the background of pancreatic head tumor. In 643 patients with obstructive bile duct disease in cholelithiasis, timing of the termination of jaundice after minimally invasive retrograde (EPT and EPT with transpapillary drainage) and percutaneous antegrade (cholecystostomy and cholangiostomy) of decompressive operations was studied.

Result. Upon cholelithiasis and hyperbilirubinemia less than 100 μmol/l, jaundice is terminated after both variants of retrograde decompression within 3–5 days, antegrade interventions increase these terms by half. Comparison of retrograde and antegrade decompressive surgeries in mechanical jaundice of medium and severe degree on the background of cholelithiasis indicates that the rate of termination of bile stasis is the highest after endoscopic papillosphincterotomy with transpapillary drainage. Isolated EPT and percutaneous cholangiostoma with medium-grade gallstones increase the duration of jaundice termination by an average of one week. Upon hyperbilirubinemia more than 200 μmol/l, cholangiostomy is not worse than transpapillary drainage. The longest termination period of obstructive jaundice (28–30 days) is observed after superimposition of MCS. In patients with jaundice of a mild degree of tumor genesis, no differences in the results were revealed after both variants of percutaneous decompression. Upon hyperbilirubinemia above 100 μmol/l, when cholangio- and cholecystostomy were compared, a higher rate of decrease in serum bilirubin was observed after percutaneous interventions with a cholecystostomy.

Conclusion. At all severity levels of mechanical jaundice on the background of cholelithiasis, the best way of decompression is endoscopic papillotomy with transpapillary drainage. In obturation bile stasis upon the pancreatic head tumor, the best decompressive effect is observed after percutaneous cholecystoostomy.